## NPN Transistors
2SC3583

■ Features

● Collector Current Capability Ic=65mA

● Collector Emitter Voltage VCEO=10V
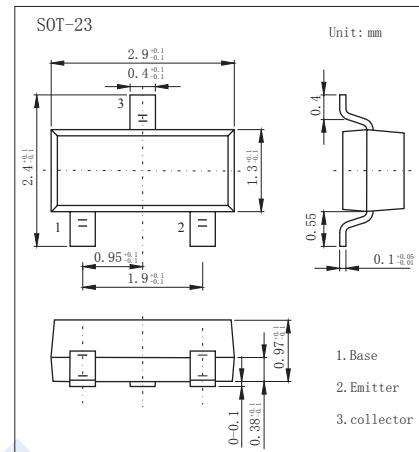
■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	VCBO	20	V
Collector - Emitter Voltage	VCEO	10	
Emitter - Base Voltage	VEBO	1.5	
Collector Current - Continuous	Ic	65	mA
Collector Power Dissipation	PC	200	mW
Junction Temperature	TJ	150	℃
Storage Temperature Range	Tstg	-65 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	VCBO	Ic= 100 μA， IE= 0	20			V
Collector- emitter breakdown voltage	VCEO	Ic= 1 mA， IB= 0	10			
Emitter - base breakdown voltage	VEBO	IE= 100 μ A， Ic= 0	1.5			
Collector-base cut-off current	ICBO	VCB= 10V , IE= 0			1	uA
Emitter cut-off current	IEBO	VEB= 1V , Ic=0			1	
Collector-emitter saturation voltage	VCE(sat)	Ic=65 mA, IB=6.5mA			0.5	V
Base - emitter saturation voltage	VBE(sat)	Ic=65 mA, IB=6.5mA			1.2	
DC current gain	hFE	VCE= 8V, Ic= 20mA	50		250	
Insertion Power Gain	$|S21e|^2$	VCE = 8 V, Ic = 20 mA, f=1GHz	11			dB
Maximum Available Gain	MAG	VCE = 8 V, Ic = 20 mA, f=1GHz		15		
Noise Figure	NF	VCE = 8 V, Ic = 7 mA, f=1GHz			2.5	
Reverse transfer capacitance	Cre	VCB= 10V, IE= 0,f=1MHz			0.9	pF
Transition frequency	fT	VCE= 8V, Ic=20mA		9		GHz

■ Classification of hfe

Type	2SC3583-R33	2SC3583-R34	2SC3583-R35
Range	50-100	80-160	125-250
Marking	R33	R34	R35

NPN Transistors
2SC3583

■ Typical Characterisitics

TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

Free air

P_T-Total Power Dissipation-W

T_A-Ambient Temperature-°C
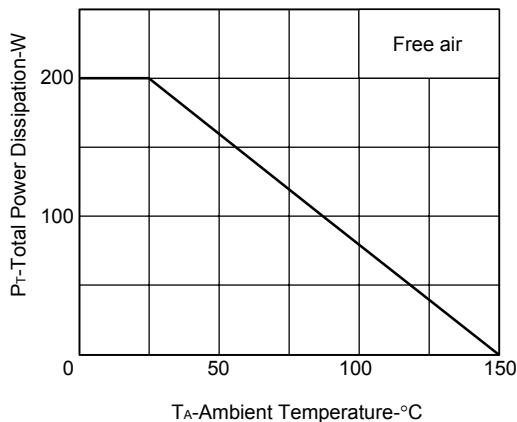
FEED-BACK CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

f = 1.0 MHz

C_{rie}-Feed-back Capacitance-pF

V_{CB}-Collector to Base Voltage-V
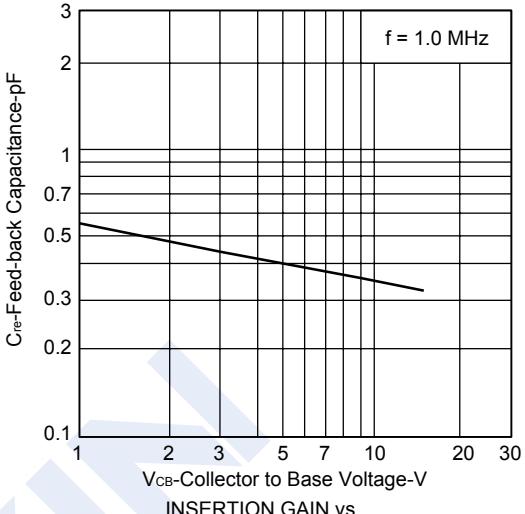
DC CURRENT GAIN vs. COLLECTOR CURRENT

V_{CE} = 8 V

h_{FE}-DC Current Gain

I_C-Collector Current-mA
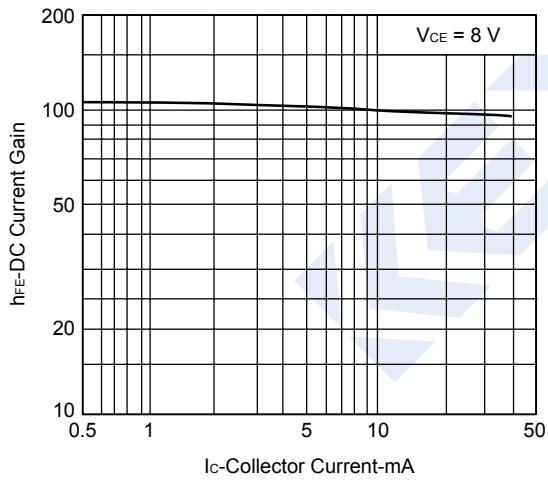
INSERTION GAIN vs. COLLECTOR CURRENT

$|S_{21e}|^2$-Insertion Gain-dB

V_{CE} = 8 V
f = 1.0 GHz

I_C-Collector Current-mA

GAIN BANDWIDTH PRODUUT vs. COLLECTOR CURRENT

V_{CE} = 8 V
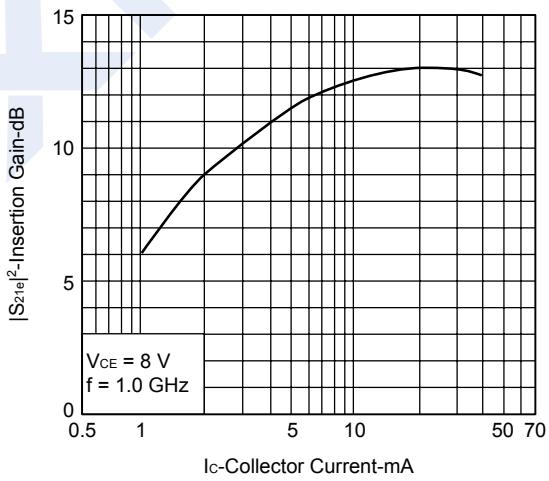
f_T-Gain Bandwidth Product-MHz

I_C-Collector Current-mA
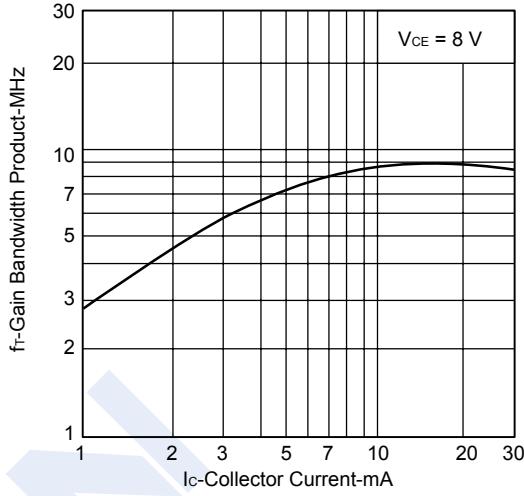
INSERTION GAIN, MAXIMUM AVAILABLE GAIN vs. FREQUENCY

V_{CE} = 8 V
I_C = 20 mA

MAG

$|S_{21e}|^2$

MAG-Maximum Available Gain-dB
$|S_{21e}|^2$-Insertion Gain -dB

f-Frequency-GHz

NPN Transistors
2SC3583

■ Typical Characterisitics

NOISE FIGURE vs.
COLLECTOR CURRENT
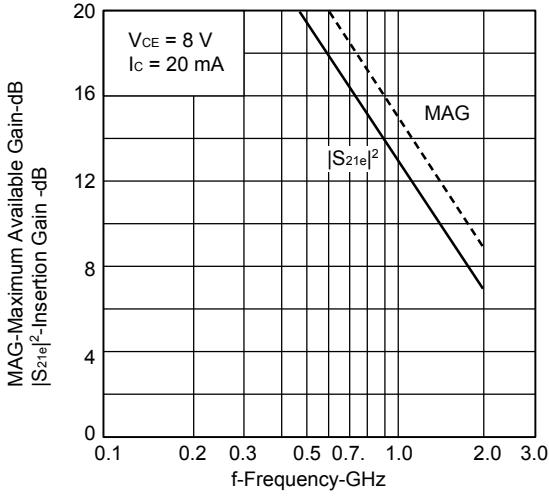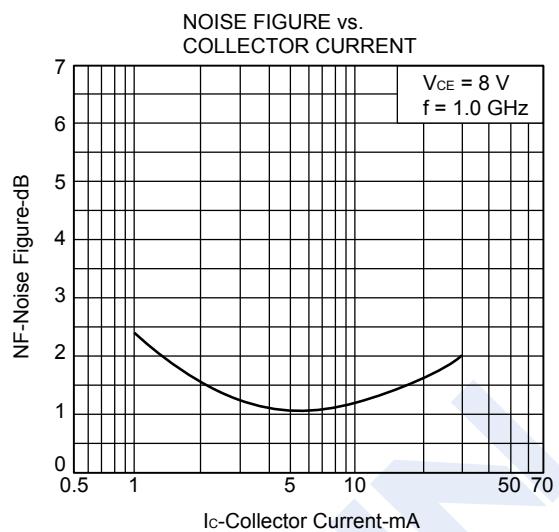
S-PARAMETER

V_{CE} = 8.0 V, I_C = 5.0 mA, Z_O = 50 Ω

f (MHz)	$|S_{11}|$	$\angle S_{11}$	$|S_{21}|$	$\angle S_{21}$	$|S_{12}|$	$\angle S_{12}$	$|S_{22}|$	$\angle S_{22}$
200	0.728	−45.3	12.107	138.7	0.036	66.2	0.825	−21.6
400	0.490	−74.5	8.097	114.2	0.065	61.6	0.675	−26.6
600	0.343	−93.2	6.260	102.3	0.079	61.6	0.582	−29.0
800	0.253	−110.1	4.623	90.1	0.090	61.2	0.529	−28.6
1000	0.202	−131.1	4.004	83.6	0.101	61.3	0.500	−30.1
1200	0.176	−148.9	3.250	75.8	0.125	60.8	0.470	−31.4
1400	0.176	−162.8	3.021	69.4	0.144	60.0	0.448	−33.4
1600	0.179	173.9	2.575	63.4	0.160	59.8	0.427	−34.8
1800	0.186	163.3	2.520	58.9	0.188	59.1	0.406	−37.5
2000	0.211	151.1	2.183	53.4	0.202	58.9	0.386	−44.5

V_{CE} = 8.0 V, I_C = 20 mA, Z_O = 50 Ω

| f (MHz)	$|S_{11}|$	$\angle S_{11}$	$|S_{21}|$	$\angle S_{21}$	$|S_{12}|$	$\angle S_{12}$	$|S_{22}|$	$\angle S_{22}$
200	0.366	−66.8	19.757	116.9	0.033	62.6	0.587	−22.5
400	0.194	−88.9	10.502	98.8	0.055	70.6	0.485	−23.8
600	0.124	−104.3	7.591	91.1	0.072	74.6	0.453	−24.3
800	0.077	−132.0	5.446	82.0	0.095	73.2	0.419	−23.2
1000	0.063	−156.4	4.653	77.6	0.107	72.1	0.413	−24.2
1200	0.065	179.5	3.754	71.6	0.135	72.1	0.392	−26.4
1400	0.074	168.0	3.460	66.5	0.164	70.1	0.369	−29.9
1600	0.108	147.0	2.934	61.9	0.178	69.6	0.347	−32.2
1800	0.116	137.6	2.870	58.2	0.205	66.3	0.333	−34.3
2000	0.134	131.2	2.479	53.4	0.221	64.0	0.312	−42.1

NPN Transistors
2SC3583

■ Typical Characterisitics

S_{11e}, S_{22e}-FREQUENCY CONDITION V_{CE} = 8 V
200 MHz Step
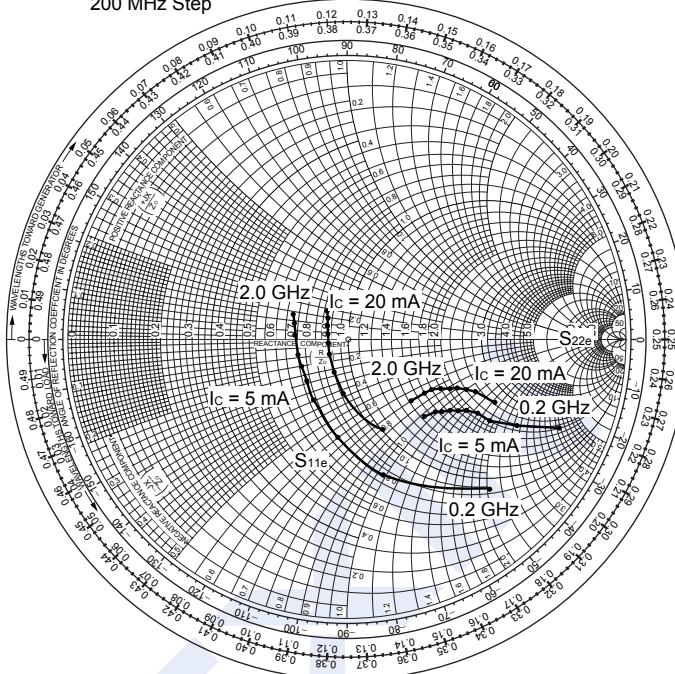
S_{21e}-FREQUENCY CONDITION V_{CE} = 8 V

S_{12e}-FREQUENCY CONDITION V_{CE} = 8 V

KEXIN